

Power for the Giants . . .



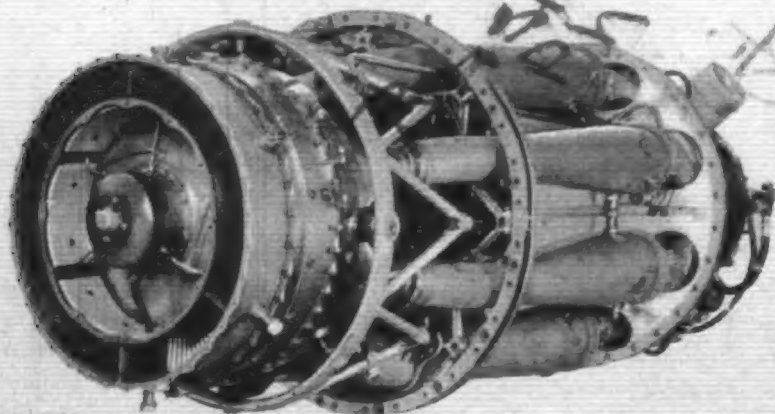
herewith show that air enters at the rear of the compressor and traverses the axial stages before passing through the centrifugal stage for delivery to the eight separate combustion chambers. This reversal of airflow direction has enabled a useful reduction of length to be effected. An important feature which is common both to the Proteus and Theseus is the mechanical separation of the compressor and airscrew-driving turbines (both axial-flow), now often referred to as the "free turbine" arrangement. Not only does this result in simplification of the airscrew system, but it makes for easier starting, since a much smaller motor will suffice. Regrettably, fuller information on the power plant proper is still withheld, but there follows a detailed survey of the coupled installation.

The two turbojet units are mounted side by side, with their centre-lines approximately 42in apart, and are attached to the coupling gearbox—a large, three-piece, cast-aluminium casing, which houses the first stage of the transmission gearing, together with various ancillary drives. The gear train comprises a double helical pinion, driven direct

by each power-turbine, each pinion meshing with an idler, which, in turn, meshes with a single output gear. Each gear and pinion is supported on ball or roller bearings. The reduction ratio is 3.2:1. Each power-turbine shaft and its pinion is connected through a dog-clutch which can be disengaged hydraulically by remote control should it become necessary to isolate a turbine in such an emergency as turbine failure. The isolating clutch is so designed as to prevent engagement while in flight. Incorporated in the drives from both turbines are torquemeters which depend for their action upon the bearing reaction imposed due to tooth loading, the minute displacement occurring being balanced against a measuring load developed in a hydraulic cylinder.

At the two extremities of the coupling gearbox casing are the electric starter motors for the turbojet units. Through the medium of bevel and spur gears, with the usual claw-type of starter dog, these drive the turbine compressor rotors; the starting sequence, in fact, differs in no way from that normally employed for turbojets. Directly

Three-quarter rear view of the Proteus.



BRISTOL PROTEUS TURBOPROP UNIT

Leading Particulars

| | | |
|---------------------------------------|-----|---|
| Overall length | ... | 99.75in (exhaust cone removed) |
| Overall diameter | ... | 38.5in |
| Net weight (dry) | ... | 2,900lb |
| Centre of gravity | ... | 18.5in forward of mounting ring attachment face |
| Fuel | ... | RDE/F/Ker. Aviation kerosene. (Specific gravity 0.81) |
| Oil | ... | Intava 7117 Type "B" (60 second viscosity) |
| Airscrew shaft size | ... | S.B.A.C. No. 6—R.S.267. |
| Airscrew rotation | ... | Left-hand tractor |
| Turbine/airscrew reduction gear ratio | ... | 11.11:1 |
| Compressor r.p.m. | ... | 10,000 maximum |
| Sea-level static power | ... | 3,200 s.h.p. + 800lb jet thrust. |